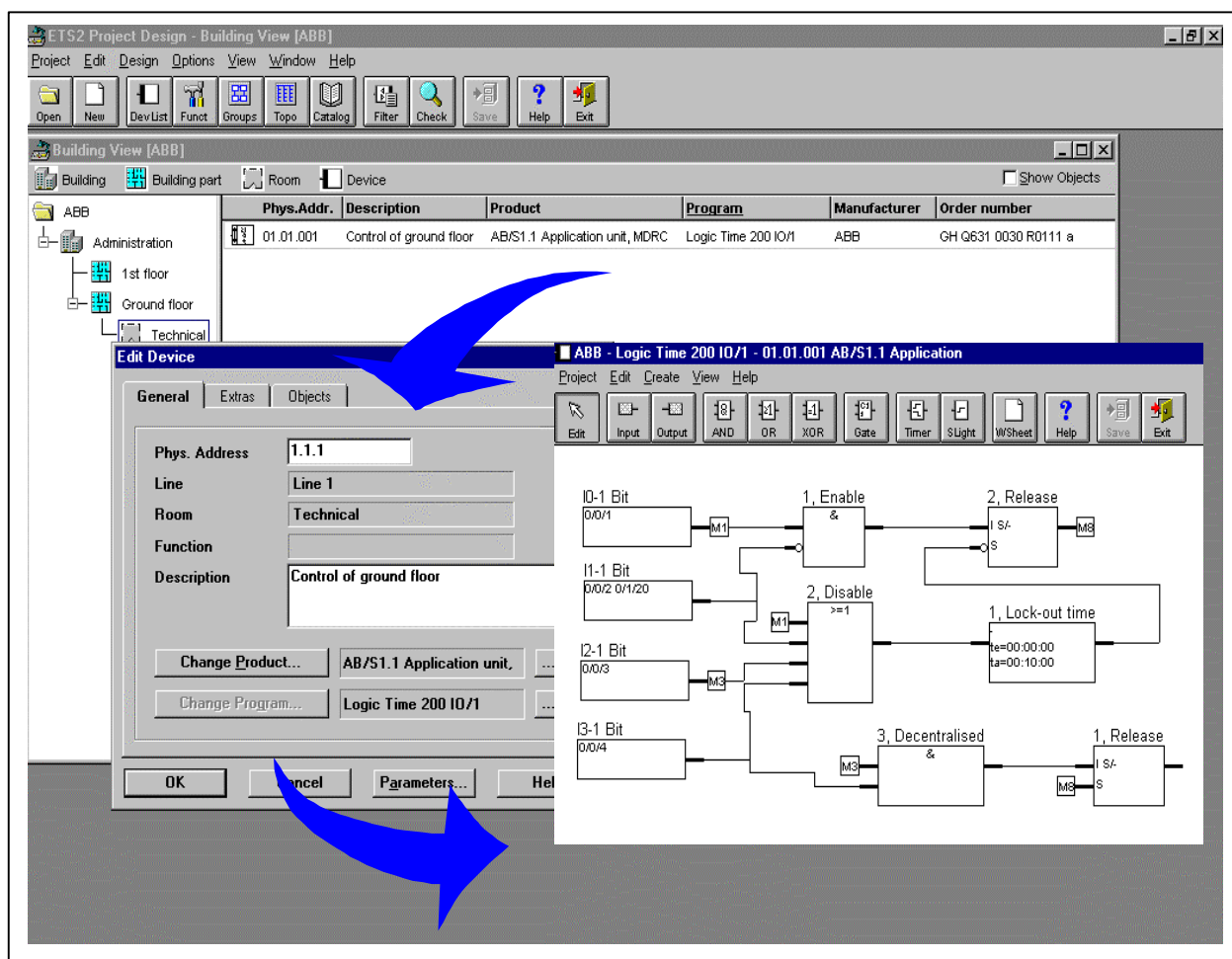


Draft
Subject to changes

Application unit AB/S 1.1

with the application *Logic Time 200 IO/1*



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Introduction

Overview

The application **Logic Time 200 IO/1** makes it possible to design and commission the logic functions of the application unit AB/S 1.1 directly in ETS2.

The parameterisation is carried out in a graphic function chart. Here the logic functions, inputs, outputs and links are applied and the parameters of the functions are edited. The application **Logic Time 200 IO/1** has the following functions available

- ☐ 200 communication objects can be selected as inputs or outputs.
- ☐ 50 logical elements can be defined as AND, OR and EXCLUSIVE OR.
- ☐ 50 gates are regulated dependent on a control input and switch through various object values.
- ☐ 30 timers and stairlight functions can be set from 0 to 18 hours.

System requirements

The following system configuration is required for using **Logic Time 200 IO/1**:

- ☐ System configuration in accordance with the ETS2 reference manual
- ☐ ETS2 V1.1
- ☐ MS Windows 3.11 or MS Windows 95
- ☐ In addition the following PC configuration is recommended:
 - Pentium CPU 133 MHz
 - 32 MB main memory
 - 17" monitor, 1024x768

Functional description of the application unit AB/S 1.1

Product description



The application unit AB/S 1.1

The application unit AB/S 1.1 is a DIN rail mounted device from the ABB i-bus EIB system. It is two modules wide and is inserted in the distribution board.

It is connected to the bus via bus connecting terminals at the front of the device.

Using the ETS2 program, the device can be loaded with applications which serve to automate processes in buildings.

There is a user-friendly, graphical interface available that is integrated into the ETS2 for the parameterisation of the application unit AB/S 1.1 with the application *Logic Time 200 IO/1*. This makes it possible to design complex logic functions both quickly and clearly.

It enables basic logic elements to be positioned and linked with each other in a very simple way. Controllers, logic operations and time control can be achieved.

Simple and clear graphical project design

Parameters are assigned to the application *Logic Time 200 IO/1* in ETS2 simply and clearly with the aid of an integrated graphical interface that is similar to a programmable controller. The configured application can be provided with comments and printed out for documentation purposes.

The application has the following basic functions available:

- ❑ 200 communication objects can be selected as inputs or outputs and allow up to 250 associations. The object type can have different formats (from 1 bit to 2 bytes).
- ❑ 50 logical elements can be defined as AND, OR and EXCLUSIVE OR, each with up to 8 inputs and one output. The inputs and outputs can be negated. Logic operations can be implemented using these logical elements.
- ❑ 50 gates which are each regulated dependent on a control input and can switch through various object values from 1 bit to 2 bytes; filter functions are likewise available. It is therefore possible for example to design partition functions.
- ❑ 30 timers and stairlight functions that can be set from 0 to 18 hours are available for ON or OFF delays. The stairlight functions are configured automatically and are therefore very easy to use.

With these basic elements, it is possible to implement logic control, logic operations, interlocks, fault signals, telegram multiplication and a range of further functions which are required in daily practice. Further applications such as memory or sequence control can also be implemented using a combination of logical elements.

Graphical project design in a function chart

The graphical user environment for the parameterisation of the AB/S 1.1 uses various basic functions and interfaces of ETS2. It is integrated directly into ETS2 and can therefore be operated in the usual ETS2 environment.

The design of the logic functions is carried out in the Project Design module of ETS2 and implemented in a graphic function chart following DIN 40900.

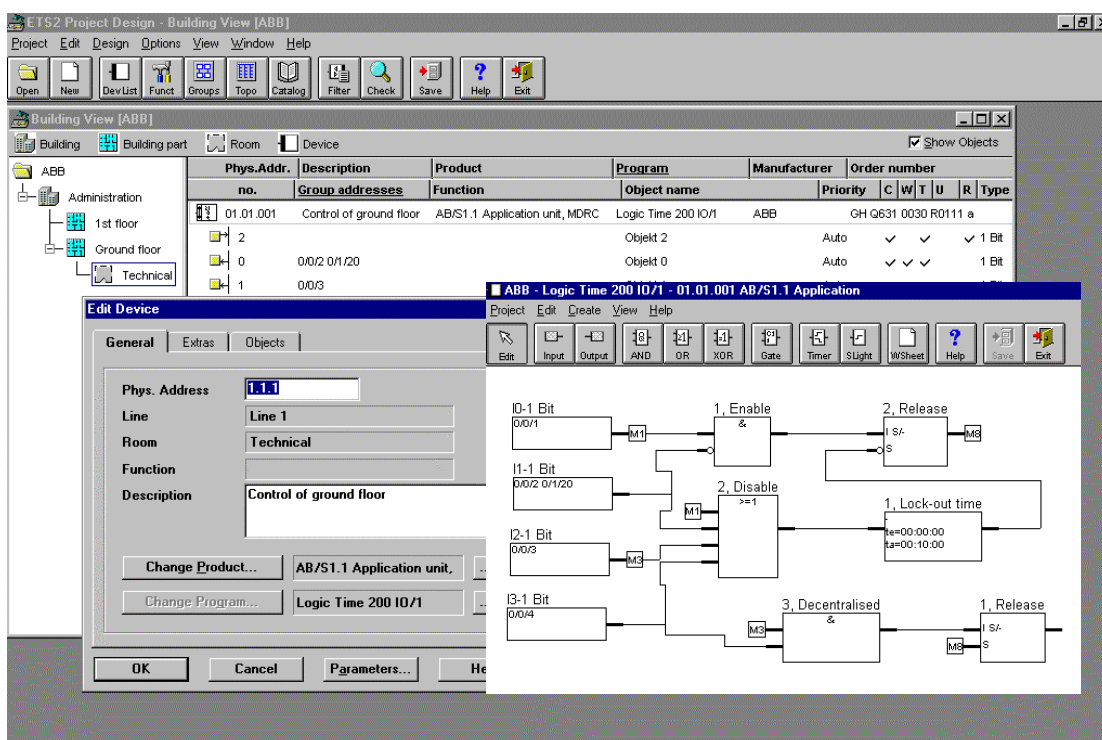
The graphic configuration module is started via the ETS2 device dialog. Here the logical functions, the inputs and outputs and the links are assigned using "drag&drop" and the parameters are set.

All the data can be printed out in graphic and list form and is stored in the ETS2 database. Data exchange is thus carried out automatically during ETS2 project export and import.

Working in a familiar software environment

The configuration and commissioning of the application unit AB/S 1.1 with logical functions is simple and intelligible for the user as no additional software package needs to be installed, learned or operated.

The project design and commissioning takes place directly in the familiar environment and working method of ETS2. The installation of the software tool is carried out automatically when loading the ETS2 product data from ABB Stotz-Kontakt.



Technical data

Power supply 24 V DC, via ABB i-bus® EIB

Operation and display elements

(Red) LED and push button For assigning the physical address

Type of protection IP 20 in accordance with DIN 40 050

Protection class II

Operating temperature range -5...+45°C

Connection

ABB i-bus® EIB Bus connecting terminal (included with supply)

Mounting on 35 mm mounting rail, DIN EN 50 022

Dimensions 90 x 36 x 64 mm (H x W x D)

Mounting depth/width 68 mm/ 2 modules at 18 mm

Weight 0.100 Kg

Logic Time 200 IO/1 functions

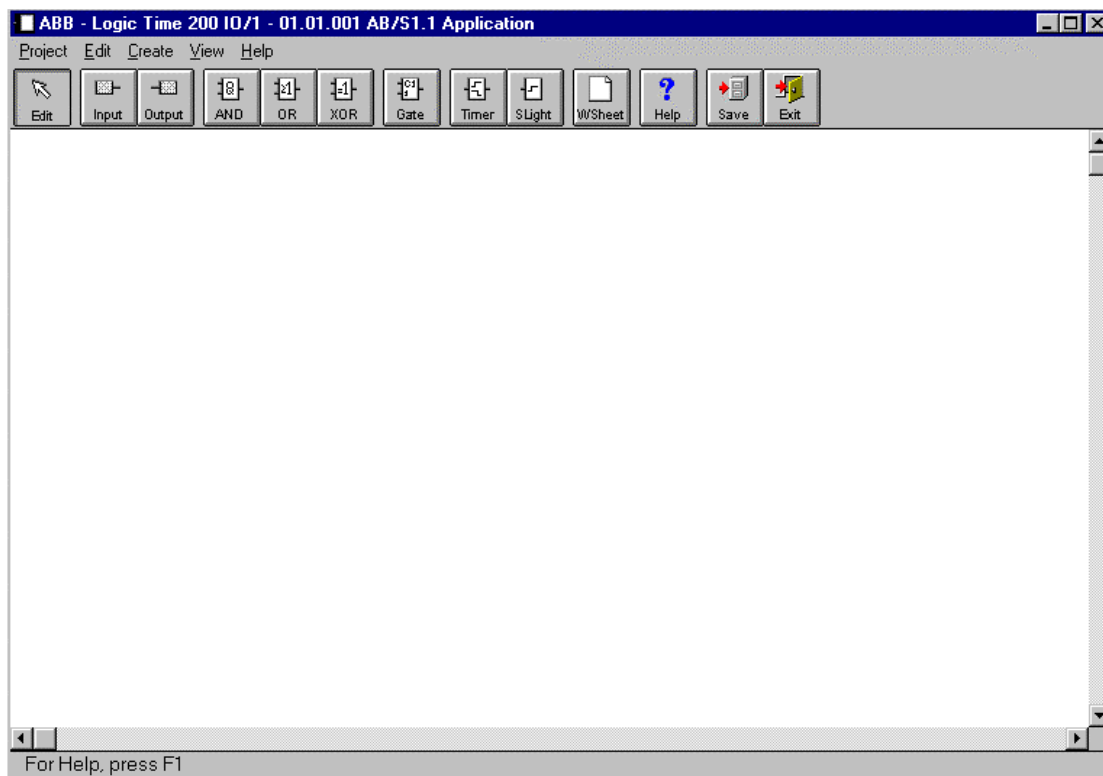
Overview

The configuration of the logic functions of the application **Logic Time 200 IO/1** is carried out directly in ETS2. The graphic configuration module is started by selecting the Parameter option in ETS2. This switches ETS2 to the background. The ETS2 device dialog is displayed again after exiting the module.

The main window of the application **Logic Time 200 IO/1** consists of

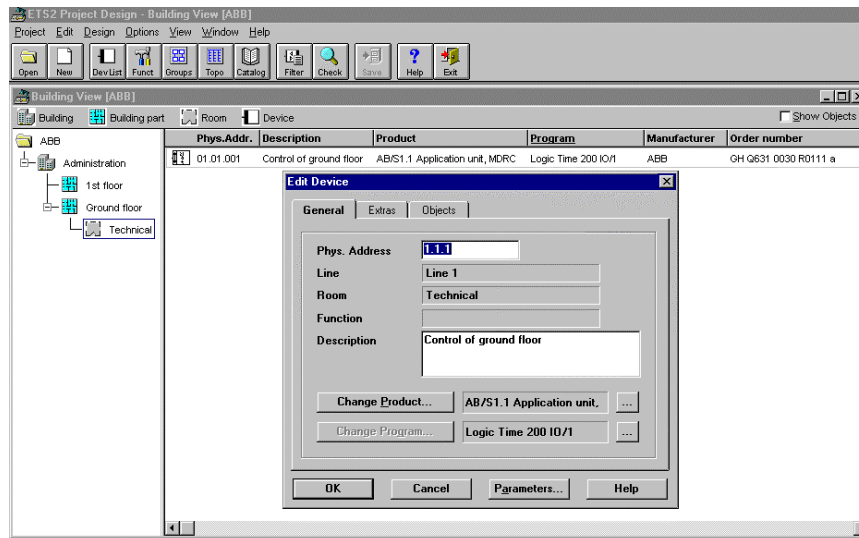
- ☐ a menu bar
- ☐ a toolbar and
- ☐ a workspace for designing the logic control

There is an integrated context-sensitive Help menu which can be called up at any time.



Starting the application Logic Time 200 IO/1

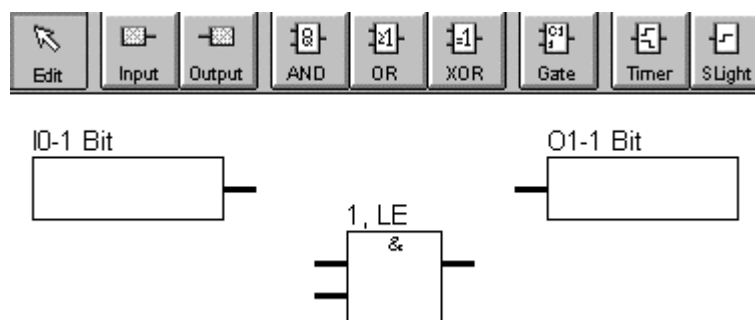
The graphic configuration module is started from the **Building View** window.



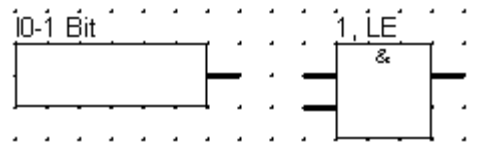
The **Edit Device** menu appears by pressing the right mouse button on the device line and selecting **Parameters..** in the pop-up menu or by double-clicking on the device. Clicking on **Parameters..** takes you into the Logic Time 200 IO/1 application.

Assigning new elements

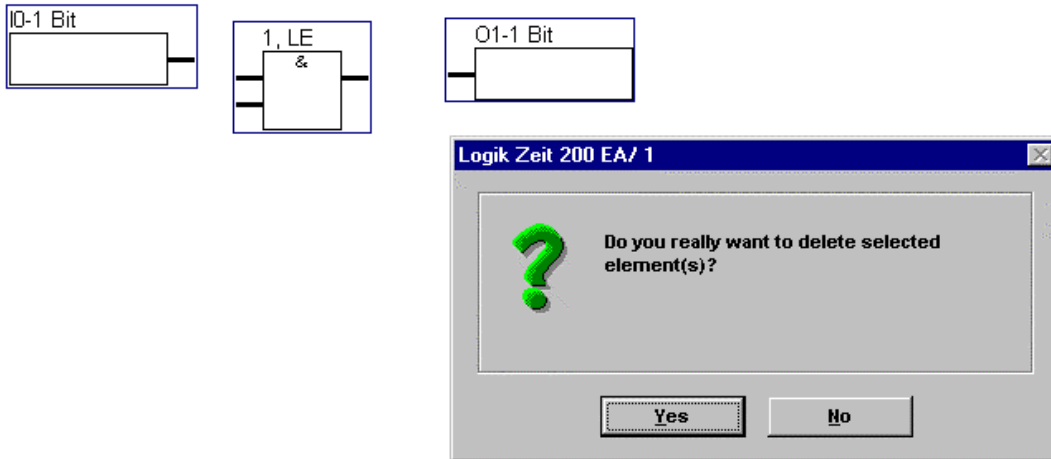
New elements such as inputs, outputs, logic functions and links can be assigned using the menu bar and the toolbar. The relevant element is selected in the toolbar and placed in the workspace. Several elements of the selected type can be added if the **Ctrl** key is pressed during insertion.



A grid can be inserted from the **View** menu in order to align the elements automatically.



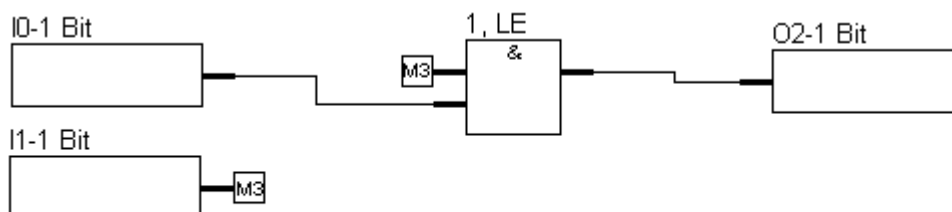
Assigned elements can be deleted. Any associated links to the element are also deleted.



Linking functions

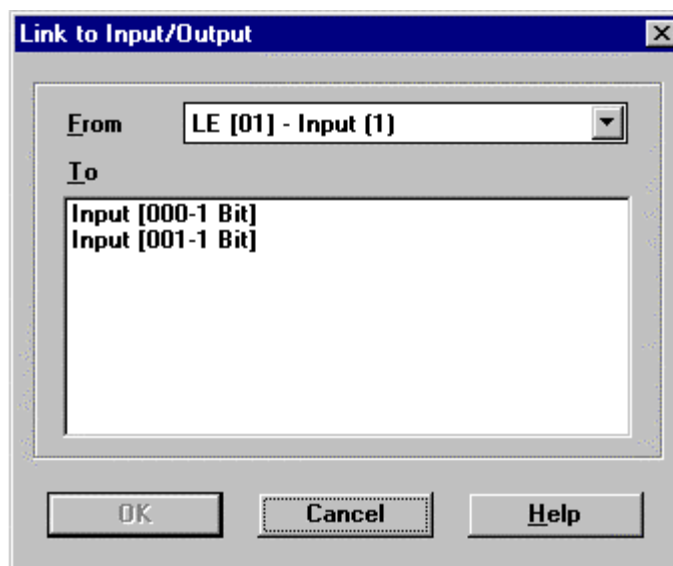
A link can be assigned by clicking on an input or output object and the input or output of a function.

The starting point of the link is selected with the left mouse button. Keeping the mouse button pressed down, the mouse pointer is then dragged until it reaches the end of the required link and the mouse button is then released.



Links are shown as lines. Crossover points are not drawn. If another line has to be crossed to represent a link, this is indicated by an auxiliary flag. The labelling of the flag is assigned automatically and cannot be changed.

In order to simplify the creation of links for larger projects, e.g. if elements which are not all in the same visual area are to be linked, it is possible to link an element using the command **Link to Input/Output**. Select the corresponding element and open the pop-up menu with the right mouse button. The command **Link to Input/Output** opens the **Link to Input/Output** dialog for the selection of input or output objects.

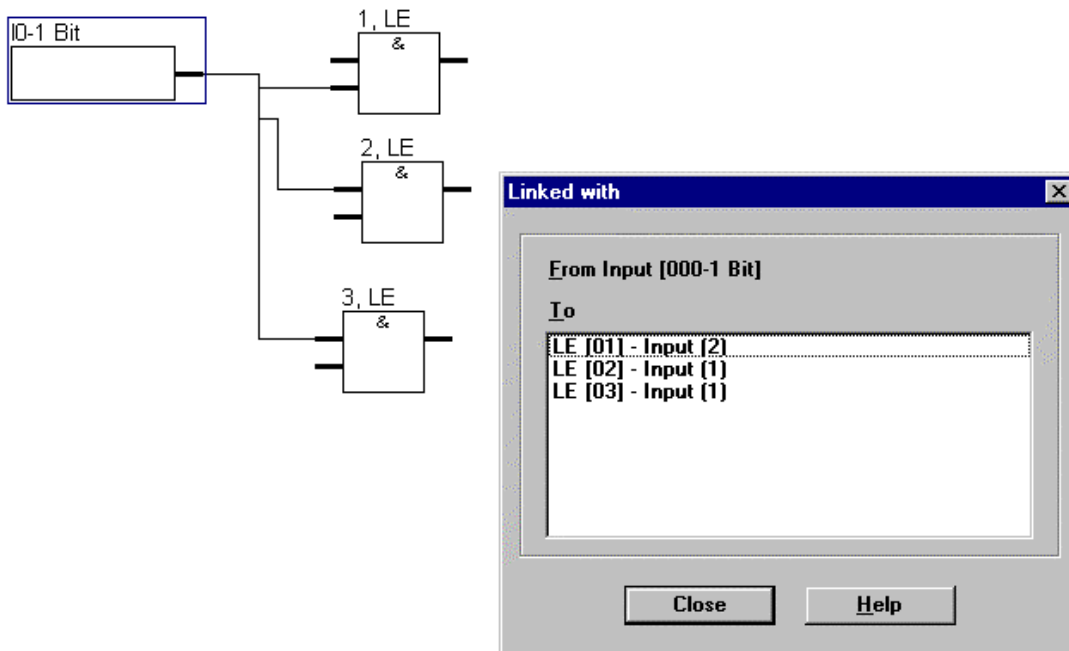


Links can be deleted by selecting and pressing the Delete key or by selecting the **Delete** command in the **Edit** menu.

Once inputs, outputs and functions have been moved in the workspace, the links are automatically updated. This process can be switched on or off via the menu function **Update Links automatically** in the **Edit** menu. The links can also be updated manually using the command **Update Links** in the **Edit** menu or by pressing the function key **F6**.

Displaying links

The associated links of an element can be displayed via the dialog **Linked with**. Select the relevant element and open the pop-up menu with the right mouse button. The command **Linked with** opens a dialog box and displays the links that have been configured.

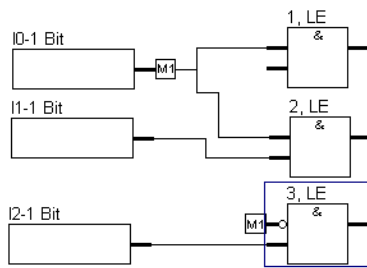


Editing elements

The parameters of the elements can be edited in detail dialogs. These are opened

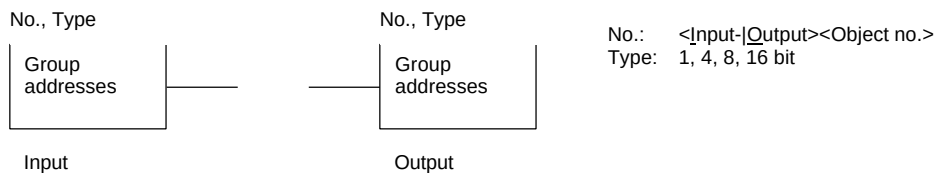
- ☐ by double-clicking on the relevant element
- ☐ via the pop-up menu
- ☐ via the Edit menu.

Function inputs and outputs are negated by a mouse click. The display of the element is changed accordingly.



No.	Negated	Linked
1	☐	☐
2	☐	☒

Input and output objects



These correspond to the communication objects of ETS2. They are therefore also visible in the ETS2 windows and can likewise be edited there. As in ETS2, the general properties of the communication objects are set in the Edit Object dialog. Group addresses are assigned using the Link dialog. Inputs and outputs have different parameters.

Input

Object Type: 1 Bit

On bus voltage recovery without loss of data: Use initial value

Initial Value: 0

On bus voltage recovery with loss of data: Use initial value

Initial Value: 0

OK Cancel Help

The following parameters can be modified via the Input dialog.

- ☐ Object type,
- ☐ Behaviour on bus voltage recovery without loss of data
- ☐ Behaviour on bus voltage recovery with loss of data

Output

Type: 1 Bit

Output sends: Only on alteration

OK Cancel Help

The following parameters can be modified in the Output dialog.

- ☐ Object type
- ☐ Send criteria

Depending on the type of connection, i.e. which function an input or output is linked with, the size of the communication object can be selected as 1, 4, 8 or 16 bit.

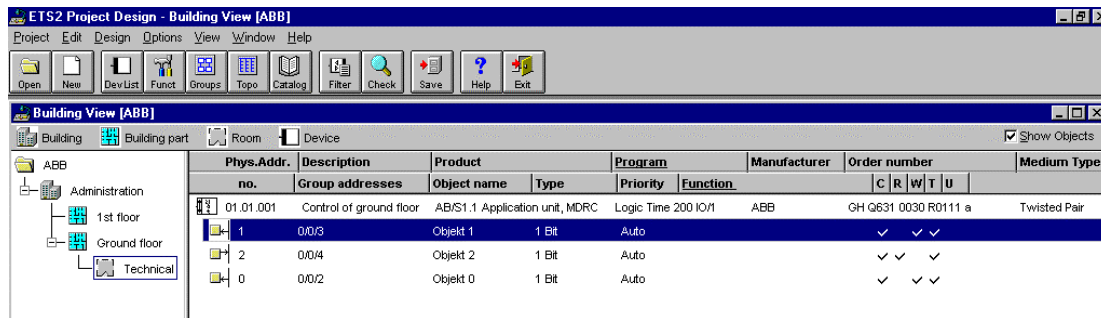
Note: In the event of a bus voltage failure, the values of the input objects are stored for at least an hour. Should the bus voltage failure last longer than an hour, the values could be lost but still be preserved. A check is therefore made in the AB/S 1.1 on bus voltage recovery before processing the values of the input objects to see whether data loss has occurred in the meantime.

Edit Object dialog

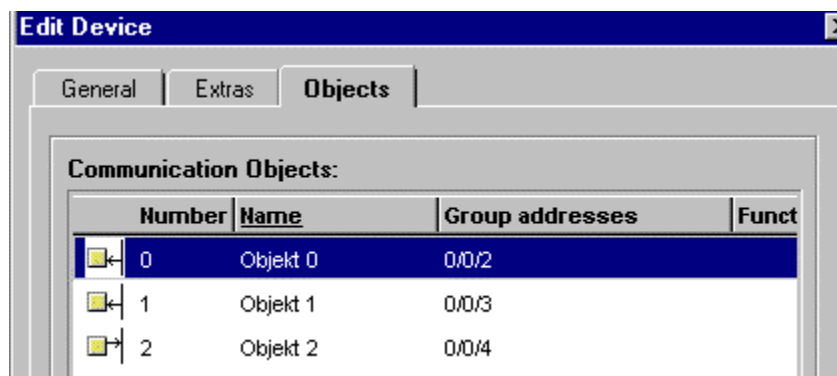
The Edit Object dialog is the standard dialog in ETS2 and contains an additional parameter interface.

The dialog is opened

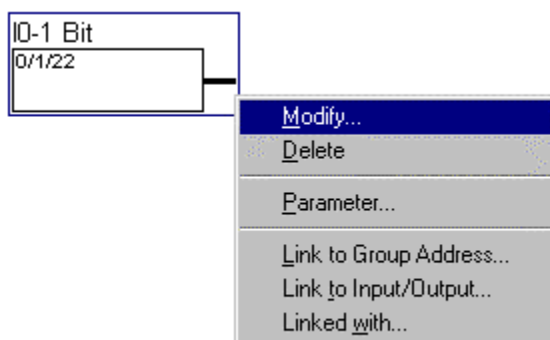
- either by selecting a communication object in a list view in ETS2,



- or in the Edit Device dialog



- or by selecting an input or output object followed by the command **Modify..** in the graphical parameter interface.



Edit Object

Name: Priority:

Function:

Key:

Type: ☒ Communication ☐ Update ☐ Read

☒ Write ☒ Transmit

Associated group addresses:

Se	Maingroup	Middlegroup	Subgroup	Address

Apart from selecting the usual communication object data, it is also possible to set the input and output object parameters and the size of the communication object by clicking on the **Parameter** option.

The **Priority** can be selected from the options in the drop-down list in the right upper hand corner and set to the following values:

- ☐ Auto: Lower priority for uncritical time functions
- ☐ Normal: Normal priority for manual functions
- ☐ Alarm: High priority for critical time functions

To set the communication object flag, make the required selection in the corresponding checkboxes.

Function	Symbol	Selection	Explanation
Communication	C	Set	A normal communication link is established between the communication objects and the bus.
		Not set	Telegrams are confirmed but the communication object is not changed.
Write	W	Set	The object value can be changed via the bus.
		Not set	The object value cannot be changed via the bus.
Read	R	Set	The object value can be read via the bus.
		Not set	The object value cannot be read via the bus.
Transmit	T	Set	A telegram which is to be sent from the application is issued on the bus.
		Not set	The device does not send any object values to the bus. Response telegrams are sent on read request.
Update	U	Set	Value response telegrams from other bus devices change the value of the communication object.
		Not set	Value response telegrams from other bus devices do not change the value of the communication object. (Note: Update is automatically set for BCU 1).

The standard values of the communication object flags are as follows:

	C	W	R	T	U
Input	X	X		X	
Output	X		X	X	
IO for stairlight	X	X	X	X	

In order to mark a group address as a sending group address, select a group address in the **Edit Object** dialog and click on the option **Set sending**.

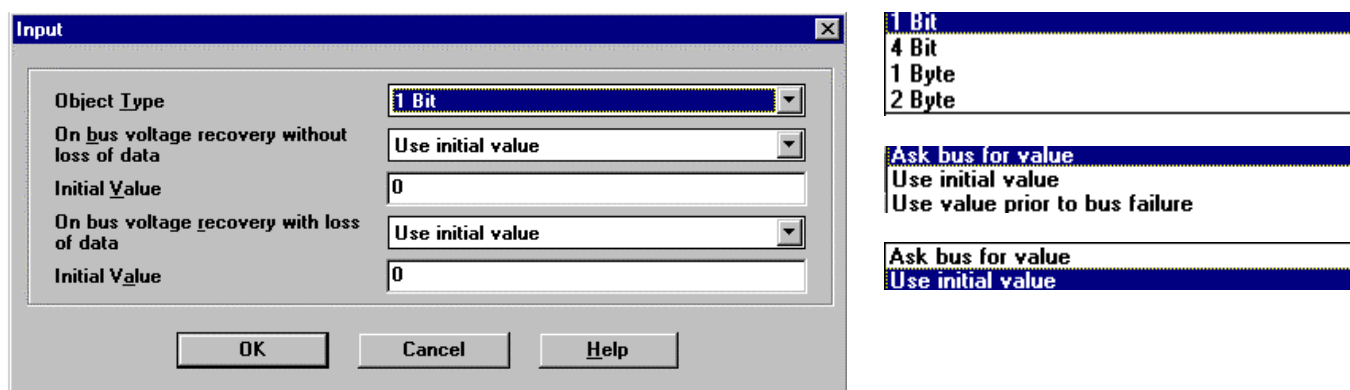
In order to delete an association between the group address and the communication object, select the group address in the **Edit Object** dialog and click on the option **Delete Association**.

Clicking on the **Standard** option sets all the values to the values preselected by the manufacturer.

Project-specific keys can be defined for buildings, building parts, rooms, functions, group addresses, areas, lines, devices and communication objects in the corresponding detail dialogs. These keys are used to communicate with other software programs such as visualisation and home management systems. It can be ignored if it is not necessary to create a link to other software programs.

Input dialog

The parameters and type of a communication object can be determined by the user in the **Input** dialog. The dialog is opened via the **Parameter** option in the **Communication object** dialog or by selecting an input object and the **Parameter** command in the graphical parameter interface.



The following parameters can be modified in the Input dialog.

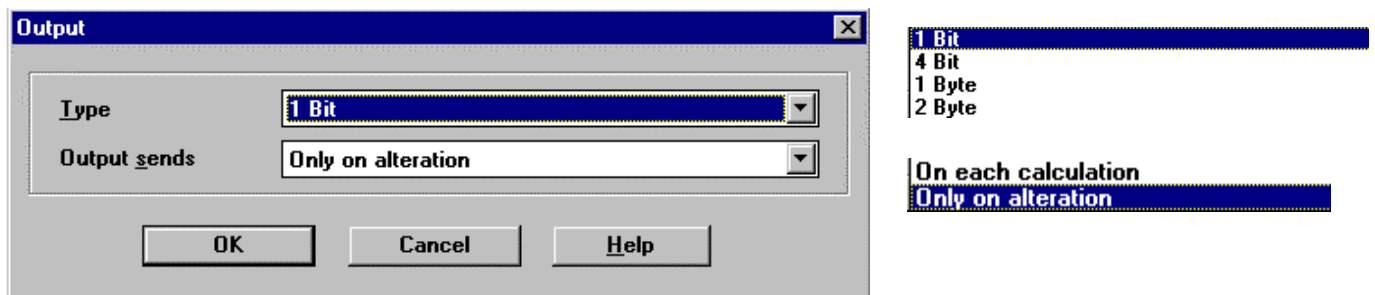
- ☐ Object type
- ☐ Behaviour on bus voltage recovery without loss data
- ☐ Behaviour on bus voltage recovery with loss of data

The size of the communication object can be selected as 1, 4, 8 or 16 bit depending on the type of association i.e. which function an input or an output is linked with.

Note: In the event of a bus voltage failure, the values of the input objects are stored for at least an hour. If the bus voltage failure lasts longer than an hour, the values of the input objects could be lost but still be preserved. A check is therefore made in the AB/S 1.1 on bus voltage recovery before processing the values of the input objects to see whether data loss has occurred in the meantime.

Output dialog

The parameter and type of a communication object can be determined by the user in the **Output** dialog. The dialog is opened via the **Parameter** option in the **Communication object** dialog or by selecting an output object and the **Parameter** command in the graphical parameter interface.



The following parameters can be changed in the Output dialog.

- ☐ Object type
- ☐ Send criteria

Depending on the type of link, i.e. which function an input or output is linked with, the size of the communication object can be selected as 1, 4, 8 or 16 bit.

Send criteria:

Setting "Output sends ... On each calculation"

With this setting, the output sends a telegram each time a new object value is assigned.

A new object value is then always given to the output if a telegram was sent to an allocated input, regardless of whether the object value has changed (e.g. from 0 to 1) or has remained the same.

It would then be the case that there is a disabled gate in the transmission path from an assigned input, which has just been sent a telegram, to the output or there is a timer operation that has still not elapsed. In this instance the output is not assigned a new object value.

If there is a feedback loop in the transmission path to an output e.g. two logical elements which form a memory device, then the output is continually assigned a new object value due to this feedback. **The output then continually sends telegrams.**

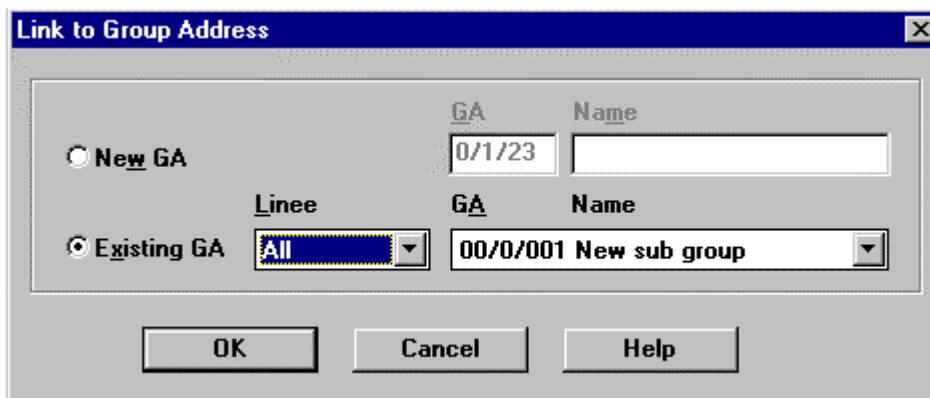
Setting "Output sends ... Only on alteration"

With this setting, the output only sends a telegram if the object value changes.

Linking input and output objects with group addresses

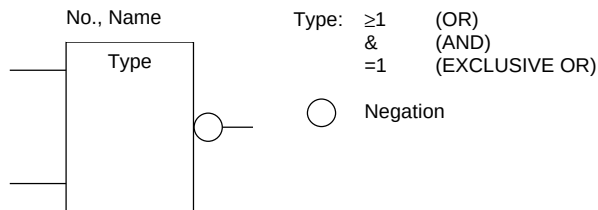
The linking of input and output objects with group addresses is carried out using an extension of the standard procedure in ETS2. Links can be assigned in the graphical parameter interface by selecting an input or output object and then calling up the **Link to Group Address** dialog.

In the dialog it is possible to assign new group addresses or to select already existing group addresses. The selection of existing group addresses can be sorted according to **Line** or **Not used**. If **All** is selected, all the existing group addresses are available for selection.



Links between input and output objects and group addresses can be deleted in the **Edit Object** dialog.

Logical element



A logical element has up to 8 inputs and one output. When a new logical element is created, it has two inputs.

Name	Value	
Name	LE	
Number	1	
Type	AND	
Inputs		
1	Negated	Linked
2		Linked
3		Not Linked
4		Not Linked

Invert output: Yes

Buttons: New, Delete, Negate, OK, Cancel, Help

The following can be edited in the **Logical Element** dialog:

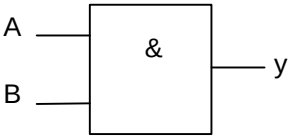
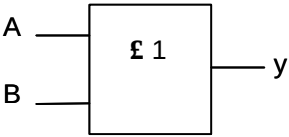
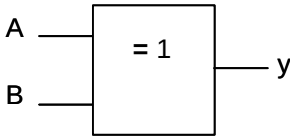
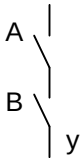
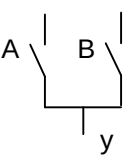
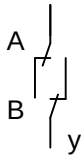
- ☐ the number of the logical element,
- ☐ its name (22 characters),
- ☐ the type (AND, OR, XOR),
- ☐ the number of inputs
- ☐ the negation of the inputs
- ☐ the negation of the output

If the number of inputs is reduced, only those inputs that have no associations are deleted. If inputs are added, the previous associations are preserved.

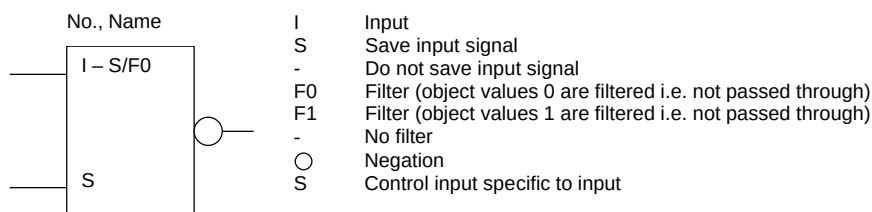
Only 1 bit objects are permitted for the inputs/outputs of the logical elements.

The inputs of a logical element can each be linked with an input or output object i.e. a communication object or an output of another function. The output of a logical element can be linked with an output object or an input of another function. An output of a logical element can thus be linked with various inputs of logical elements.

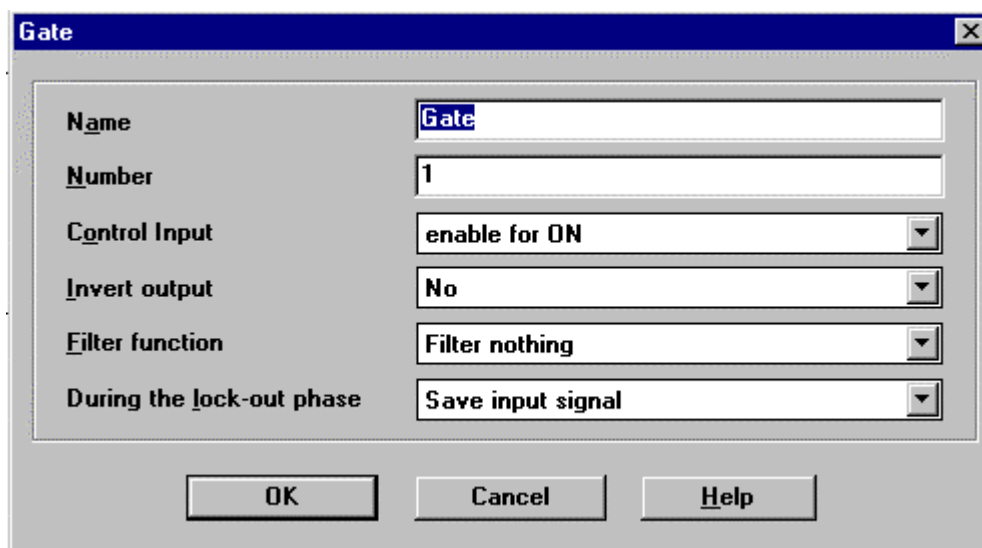
The following types of logical element are available:

AND	OR	EXCLUSIVE OR (XOR)																																													
																																															
																																															
<table> <thead> <tr> <th>A</th><th>B</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	A	B	y	0	0	0	0	1	0	1	0	0	1	1	1	<table> <thead> <tr> <th>A</th><th>B</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>0</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>1</td></tr> </tbody> </table>	A	B	y	0	0	0	0	1	1	1	0	1	1	1	1	<table> <thead> <tr> <th>A</th><th>B</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>0</td><td>1</td></tr> <tr><td>1</td><td>1</td><td>0</td></tr> </tbody> </table>	A	B	y	0	0	0	0	1	1	1	0	1	1	1	0
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Gate



A gate has one input, one output and a control input as well as a filter and a save function for the input. If an event occurs at the input and the gate is enabled, it can transfer the value at the input to the output. If the gate is disabled, there is no reaction.



The Gate dialog box is a standard Windows-style window with a title bar labeled 'Gate'. It contains several labeled fields and dropdown menus. The 'Name' field contains 'Gate'. The 'Number' field contains '1'. The 'Control Input' dropdown is set to 'enable for ON'. The 'Invert output' dropdown is set to 'No'. The 'Filter function' dropdown is set to 'Filter nothing'. The 'During the lock-out phase' dropdown is set to 'Save input signal'. At the bottom, there are three buttons: 'OK', 'Cancel', and 'Help'.

Parameter	Value
Name	Gate
Number	1
Control Input	enable for ON
Invert output	No
Filter function	Filter nothing
During the lock-out phase	Save input signal

The following parameters can be set via the **Gate** dialog:

- ☐ the number of the gate,
- ☐ the name of the gate (22 characters),
- ☐ the negation of the control input,
- ☐ the negation of the output,
- ☐ the filter function
- ☐ the save function

The following rules apply when assigning parameters:

- ☐ All object types are permitted for the input and output.
- ☐ The object types of the input and output must be identical.
- ☐ If the output is assigned a 1 bit object, the output can be negated.
- ☐ The input can be linked with an input or output object with an output of another function.
- ☐ The output can be linked with an output object or with an input of another function.
- ☐ Only 1 bit objects are permitted for the control input.
- ☐ The control input can be linked with an input object or with an output of another function.
- ☐ The filter can only be activated if the input is assigned a 1 bit object.
- ☐ The filter function affects the input.
- ☐ The save function determines whether input signals should be saved when the gate is closed.

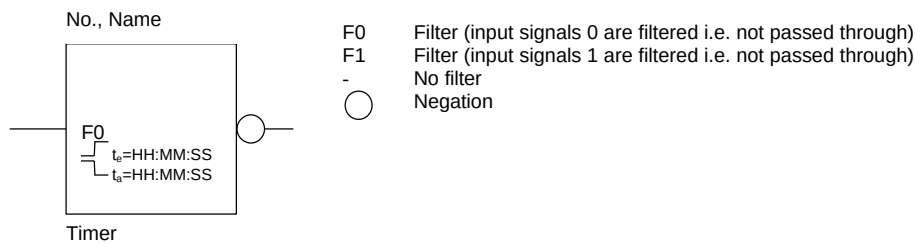
The following applies for the filter:

F0 = Input signals with the value 0 are filtered out i.e. not passed through

F1 = Input signals with the value 1 are filtered out i.e. not passed through

Note:	With the parameter Save input signal , the last stored input signal is shown at the output when the control input is enabled. If Do not save input signal is selected, there is no reaction.
--------------	--

Timer



A timer consists of an input and an output as well as a time delay for object values. A filter can also be defined.

Timer

Name

Number

Invert output

Filter function

ON delay

Hours	Min.	Sec.
0	0	0

OFF delay

Hours	Min.	Sec.
0	0	0

OK **Cancel** **Help**

The following parameters can be set via the **Timer** dialog:

- ☐ the number of the timer,
- ☐ the name of the timer (22 characters),
- ☐ the negation of the output,
- ☐ the filter
- ☐ ON and OFF delay

The following rules apply when assigning parameters:

- ☐ Only 1 bit objects are permitted for the input and output object.
- ☐ The output can be negated.
- ☐ The input can be linked with an input or output object or with an output of another function.

- ☐ The output can be linked with an output object and an input of another function.
- ☐ The filter affects the input.
- ☐ The time delay can be set between 0 and 18 hours 12 minutes and 15 seconds.

The following applies for the filter:

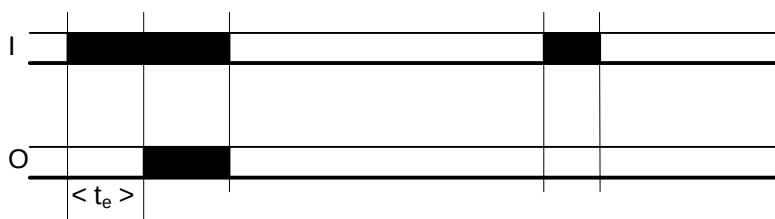
F0 = Input signals with the value 0 are filtered out i.e. not passed through

F1 = Input signals with the value 1 are filtered out i.e. not passed through

The following time functions can be implemented:

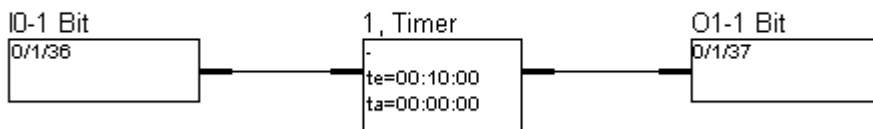
ON delay:

An input signal of a longer duration appears at the output with an interval defined by the ON delay (t_e).



Mode of operation for AB/S

1, ON delay



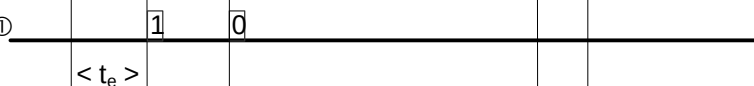
Telegrams

at the input



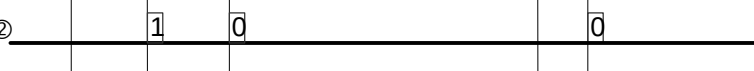
Telegrams

at the output ①



Telegrams

at the output ②

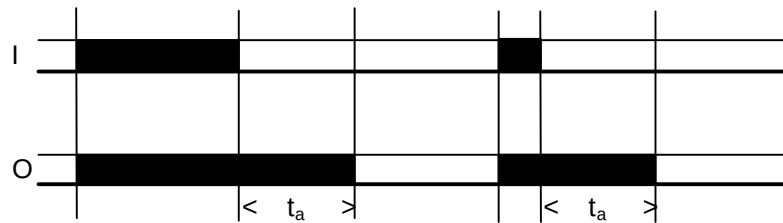


① For the parameter setting “Output sends ... Only on alteration”

② For the parameter setting “Output sends ... On each calculation”

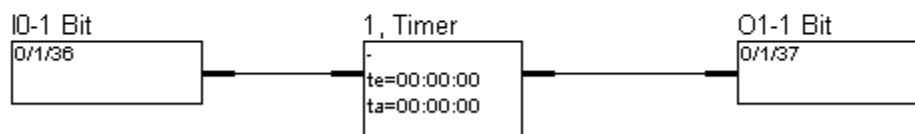
OFF delay:

After the removal of the input signal, the output remains "1" for the duration of the OFF delay (t_a).



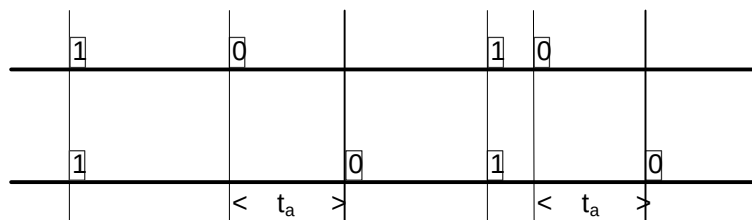
Mode of operation for AB/S

1, OFF delay



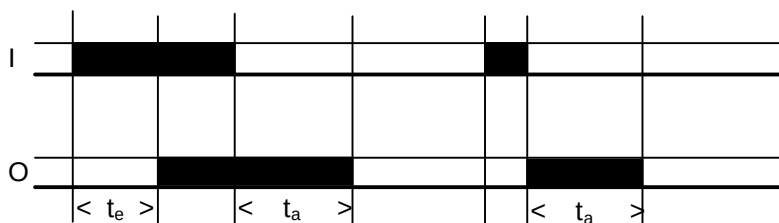
Telegram
at the input

Telegram
at the output



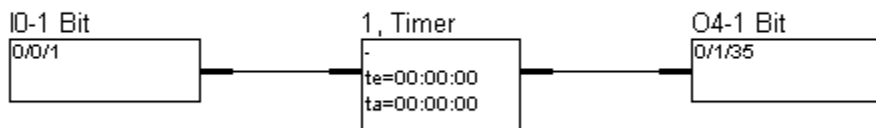
ON and OFF delay:

The output signal becomes “1” after the ON delay t_e and remains in this state after the input signal has been removed for the duration of the OFF delay t_a .



Mode of operation for AB/S

1, ON and OFF delay

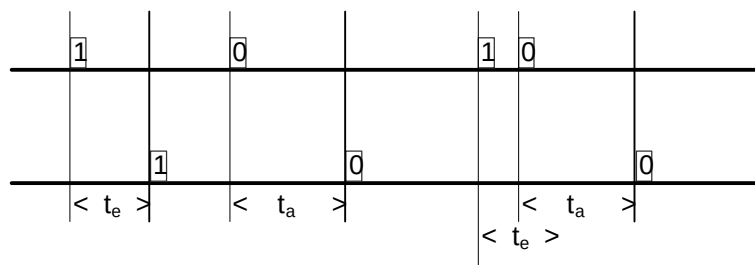


Telegrams

at the input

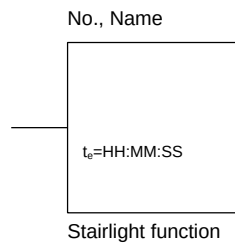
Telegrams

at the output



Note: In the event of bus voltage recovery after a bus voltage failure, the timers return to their initial state.

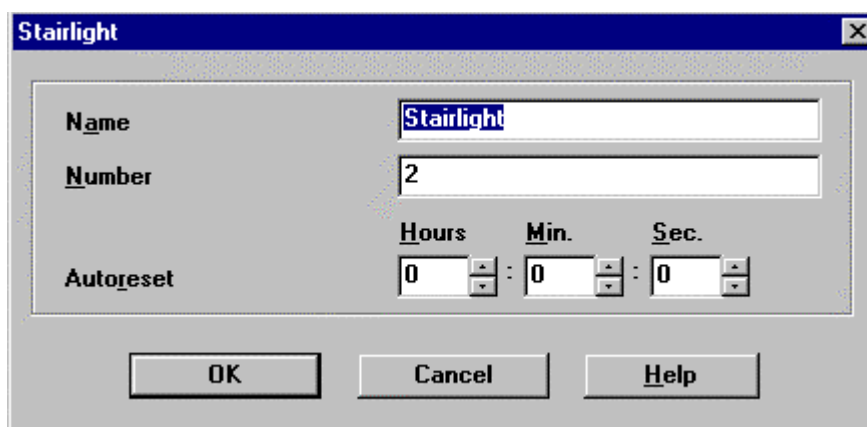
Stairlight function (Autoreset)



A stairlight function consists of an input object that is simultaneously an output object.

The following parameters can be set via the **Stairlight** dialog:

- ☐ the number of the stairlight,
- ☐ its name (22 characters),
- ☐ the ON delay

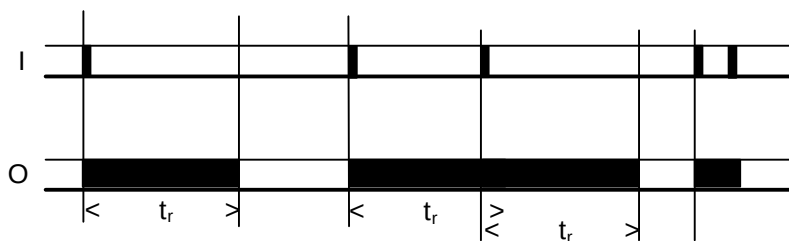


The following rules apply when assigning parameters:

- ☐ Only 1 bit objects are permitted for the input object.
- ☐ The time delay can be set between 0 and 18 hours 12 minutes and 15 seconds.

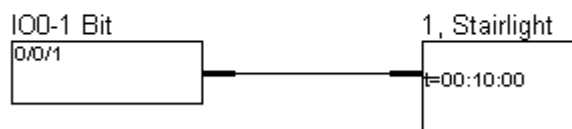
Note: In the event of a bus voltage failure, the stairlight function immediately reverts to its initial state i.e. the outputs go to zero signal regardless of the signals applied at the input or the time that has already elapsed.

The input signal (which is simultaneously an output signal) is reset for the stairlight function after the autoreset time t_r . If there is a new input signal within the autoreset time, the output signal remains at “1” and the autoreset time is restarted.



Mode of operation for ABS

1, Stairlight function

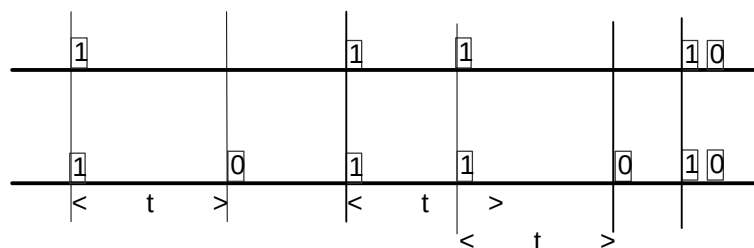


Telegrams

at the input

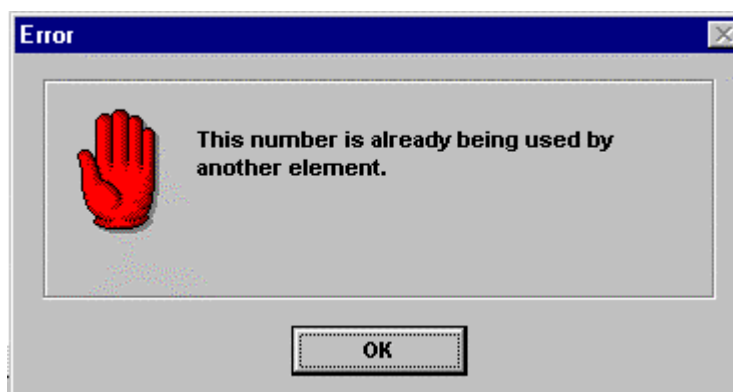
Telegrams

at the output



Validity checks

Validity checks are carried out during the parameterisation. If an incorrect entry is made, the user is given information regarding possible sources of error.



Print

The parameterisation can be printed out in graphical or list form. It is also possible to have a print preview of both views via the menu command **Print Preview**. The ETS2 standard title page can be printed out as a title page for the list view. This contains the properties and statistics of the project. The header contains the device names as well as their physical addresses. The footer contains the page number, the current date and time. It is possible to print all the pages, specific pages or user-defined worksheets.

Page setup

The layout of the printed page can be set using the **Page Setup** dialog.

Refer also to the ETS2 manual

Page format

The title page is created with the general project data provided that the checkbox **Title page** is selected.

Refer also to the ETS2 manual

Print setup

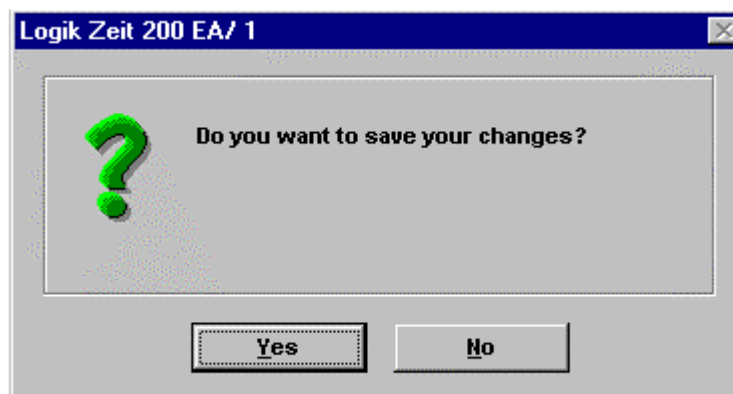
The printer, page orientation and paper can be selected in the standard MS Windows **Print setup** dialog.

Refer also to the ETS2 manual

Save

All the parameterisation data forms a part of the ETS2 project and is stored in the ETS2 database.

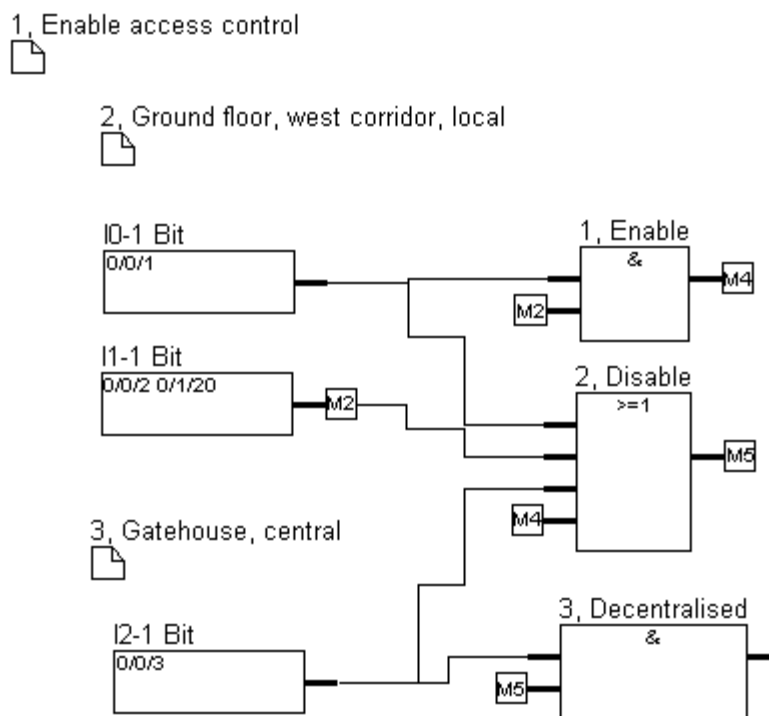
The parameterisation can be stored temporarily by pressing the push button **Save** in the toolbar.



When exiting the application you are asked to confirm whether you wish the parameterisation to be saved. Additionally the **OK** button in the **Edit Device** window should be pressed.

Worksheet management

The graphical parameter interface can quickly become confusing the more complex the parameterisation becomes and the lower the hardware requirements are for screen size and resolution. Worksheet management is used in order to avoid this.



A worksheet is a text field. It describes a part of the graphical parameterisation and is implemented in the form of jump labels. The graphical interface contains up to 31 worksheets. Worksheets can be applied, edited and deleted.

The following can be defined

- ☐ name (22 characters)
- ☐ number
- ☐ position

A worksheet can be selected using the menu. The selected worksheet is then placed in the visible area of the screen.

Toolbar



1 2 3 4 5 6 7 8 9 10 11 12 13

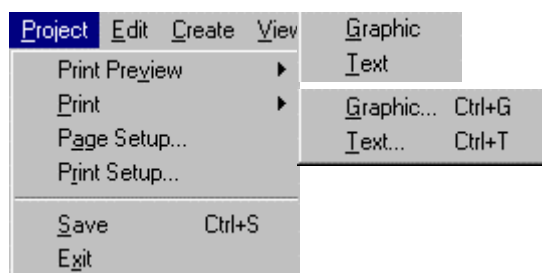
The toolbar contains frequently used functions. All the functions of the toolbar can also be accessed via corresponding menus and are described there in more detail.

1. **Edit**: Selects the Edit mode for selecting elements in the workspace.
2. **Input/Output**: Inserts an input/output in the workspace.
3. **AND**: Inserts an AND logical element in the workspace.
4. **OR**: Inserts an OR logical element in the workspace.
5. **XOR**: Insert an EXCLUSIVE OR logical element in the workspace.
6. **Gate**: Inserts a gate function in the workspace.
7. **Timer**: Inserts a timer function in the workspace.
8. **SLight**: Inserts a stairlight function in the workspace.
9. **WSheet**: Inserts a new worksheet (text field) in the workspace.
10. **Help**: Opens the on-line Help system.
11. **Save**: Temporarily saves the data in the ETS2 database.
12. **Exit**: Closes the application Logic Time 200 IO/1 and returns to the Edit Device dialog.

Menu bar

All the functions of the toolbar are also available in the menu bar. Depending on the selected entry, further functions are available here.

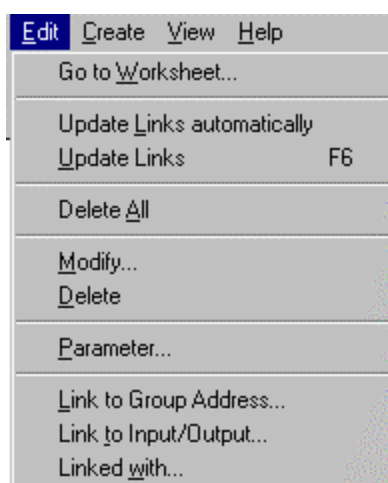
Project menu



This menu contains the functions

1. **Print Preview:** Displays a print preview of the graphic or list.
2. **Print:** Prints the graphic or list.
3. **Page Setup:** For setting the page margins, font and page format.
4. **Print Setup:** For selecting the printer.
5. **Save:** Saves the data temporarily in the ETS2 database.
6. **Exit:** Closes the application Logic Time 200 IO/1 and returns to the Edit Device dialog.

Edit menu

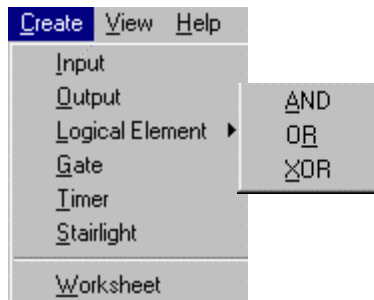


The content of the menu depends on the selected element and contains functions for editing or deleting.

1. **Go to Worksheet:** Opens a dialog for selecting a worksheet.
2. **Update Links automatically:** Allows you to switch the automatic update of links between inputs, outputs and functions on or off.
3. **Update Links:** For the manual update of the links between inputs, outputs and functions.
4. **Delete All:** Deletes all the elements in the workspace after checking with the user.
5. **Modify:** Opens the **Edit** dialog of the selected element.
6. **Delete:** Deletes the selected element after checking with the user.
7. **Parameter:** Opens the **Parameter** dialog of the selected element.
8. **Link to Group Address:** Opens the **Link to Group Address** dialog for assigning a group address to an input or output object.

9. **Link to Input/Output:** Opens the **Link to Input/Output** dialog to link an input to an output.
10. **Linked with:** Opens the **Linked with** dialog to display the configured associations of an element.

Create menu



This menu contains functions for assigning new elements (input and output objects, logical element, gate, timer and stairlight functions) and for assigning new worksheets using worksheet management.

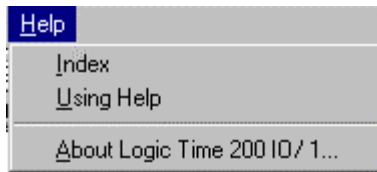
View menu



It is possible to select here whether the status and toolbar are displayed. The position of the toolbar can also be determined.

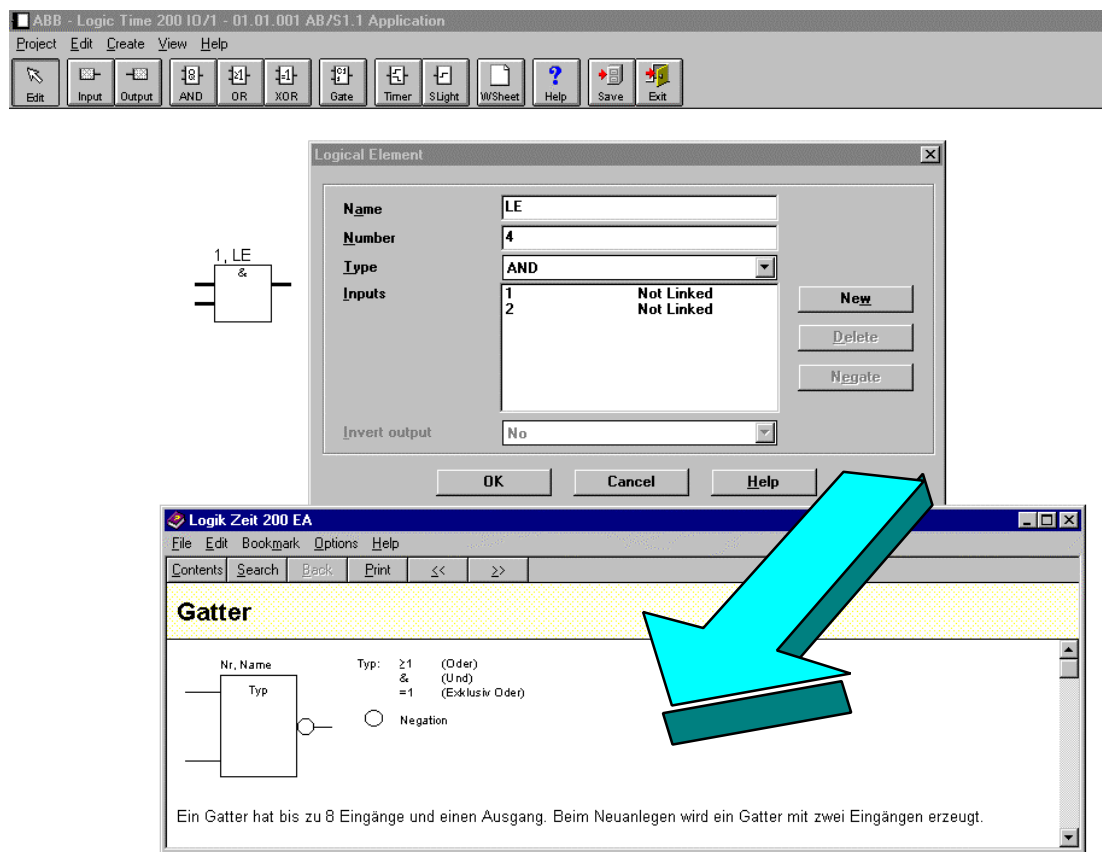
The elements can be snapped into an exact position via the **Grid** command.

Help menu



The product-specific Help topics and the Info dialog can be displayed in this menu.

The Help menu can also be called up while a dialog is open: in this case it is context-sensitive and displays the information necessary for carrying out the editing step.



Using the workspace

Moving elements in the workspace

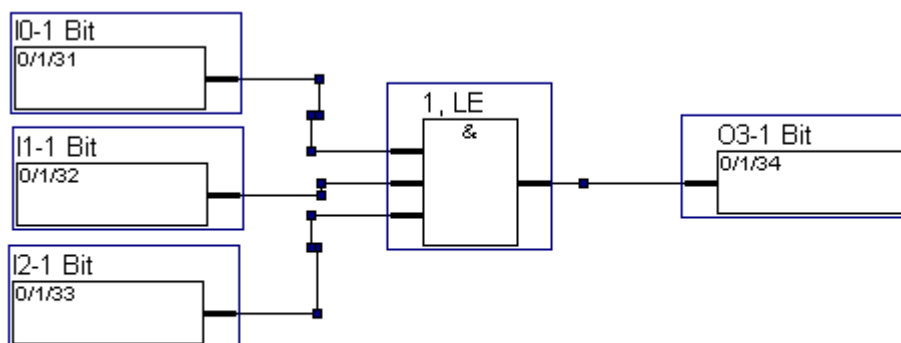
The visible area of the workspace can be moved using the roll bars on the right hand side and at the bottom of the screen. Elements can also be moved to a position outside the visible area. Select the corresponding element with the left mouse button and move the mouse pointer in the required direction, keeping the mouse button pressed down. The visible area of the workspace moves if the roll bars are crossed over once or several times. If necessary the workspace is enlarged.

Selection of elements

An element can be selected by clicking on it with the left mouse button e.g. to move or delete it. This is also the case when selecting a line of association.

Multiple selection of elements

Several elements can be selected at once, e.g. for moving or deleting. The elements are selected using the mouse. Press the left mouse button and drag out a rectangle, keeping the mouse button pressed down. The selected elements are then displayed in colour. If elements outside the visible range are to be included, please press the cursor arrow keys on the keyboard while dragging the rectangle. The visible section of the workspace is moved and further elements can be selected.



Hot key table

Ctrl + G	- Print graphic
Ctrl + T	- Print text
Ctrl + S	- Save
Del	- Delete
F1	- Help
F5	- Update display
F6	- Update links

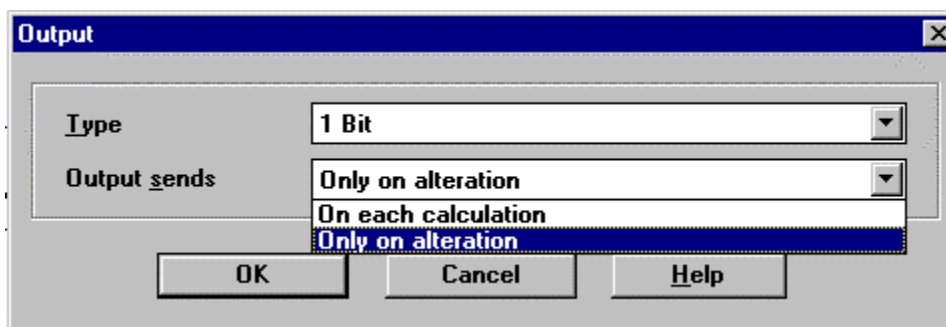
Notes for use

The “event-driven logic” of AB/S 1.1

Working with logic functions with EIB differs in several points from working with a programmable logic controller (PLC) or a hard-wired programmed controller.

With a PLC or hard-wired controller, only a 1 signal or 0 signal can be applied statically at the input. With EIB however it is possible that an input object already has the value 1 and another telegram with the value 1 is sent or that an input already has the value 0 and another telegram with the value 0 is sent.

In order to be able to react to telegrams like these which send the same value to a communication object more than once, it is possible to select for the output of the AB/S 1.1 program that the output sends "Only on alteration" or "On each calculation".



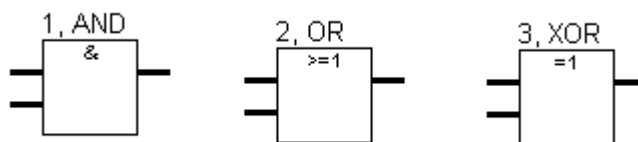
If the setting "Only on alteration" is selected as in the above example, the output only sends a telegram if a telegram is sent to the input which changes the value of the input object and thus also the output object. This is a characteristic also shown by a PLC or a hard-wired programmed controller.

If however the setting "On each calculation" is selected then the output itself sends a telegram each time a telegram is sent to the input i.e. even if there is no change in the value of the input object and therefore the output. This is a characteristic which ABB i-bus EIB logic modules also display.

This characteristic, i.e. reacting not only to a signal change but also to repeated telegrams with the same value, can be described in a wider sense by the term "event-driven logic".

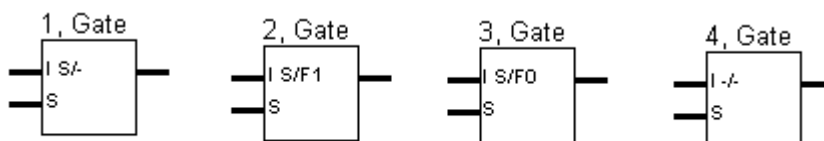
AND, OR, XOR logic functions

There are no particular peripheral conditions to consider when using the "normal" logical functions such as AND, OR or EXCLUSIVE OR.



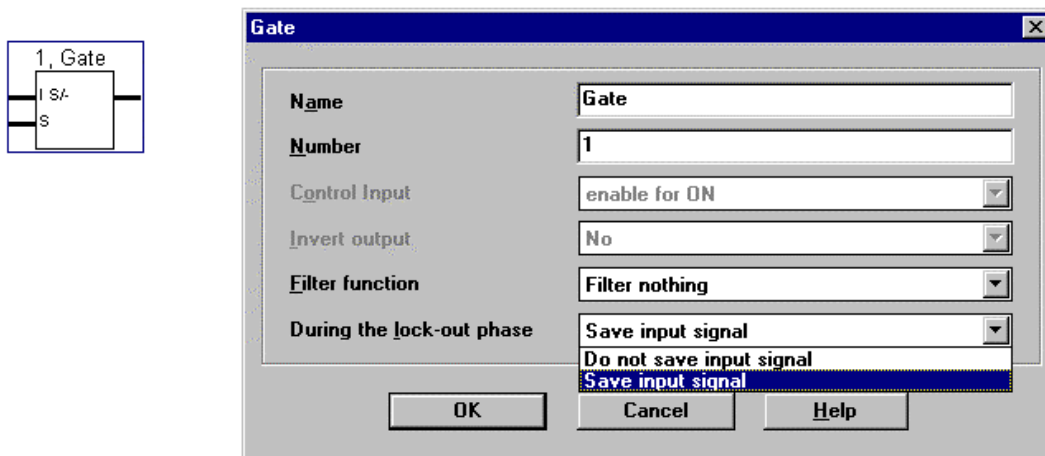
Gate

The gate is one of the most important functional elements of event-driven logic.



If an event occurs at the input and the gate is enabled, it can transfer the value at the input to the output. If the gate is disabled, there is no reaction.

If a gate is enabled, there are two possibilities depending on the parameters assigned:

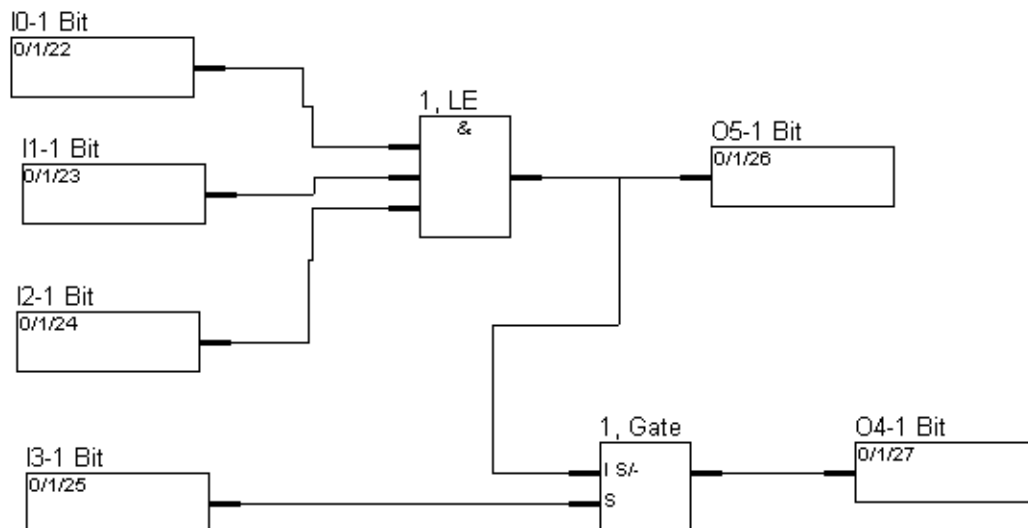


- 1- If the parameter "Save input signal" is selected, the value at the input of the gate is transferred to the output when the gate is enabled.
- 2- If the parameter "Do not save input signal" is selected, the value at the input of the gate is **not** transferred to the output when the gate is enabled. In this case an event must first occur at the input of the gate, in order for the gate to transfer the value at the input to the output.

If however

- ☐ a gate is switched, which is not enabled, in a functional sequence between an input and an output,
- ☐ or the output has been assigned parameters so that it also sends a telegram each time a telegram is sent to an assigned input,
- ☐ or a telegram is sent to the input that is in front of the gate

then the output does **not** send a telegram.

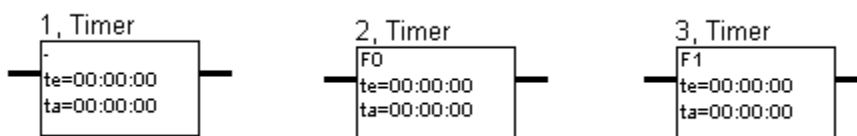


In the above example, both outputs have been assigned parameters so that they should send a telegram on each assignment of a new object value.

If a telegram is now sent to inputs 0, 1, 2 with any value, then output 5 also sends each time. Output 4 however only sends a telegram if the gate has previously been enabled.

Timer

The timer has the same importance as the gate in "event-driven logic".



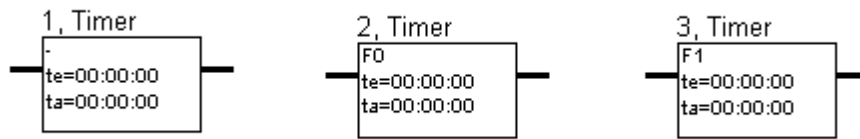
In a functional sequence where the output is set to send a telegram on each calculation of a new value, the timer behaves in the same way as a gate.

If therefore

- ☐ a timer is switched in a functional sequence between an input and an output,
- ☐ or the output is set so that it sends a telegram every time a telegram is sent to an allocated input,
- ☐ or a telegram is sent to the input which is in front of the gate,
- ☐ or the timer operation has not yet elapsed,

the output does **not** send a telegram.

A timer operation that has not elapsed can be compared to a gate that is disabled.



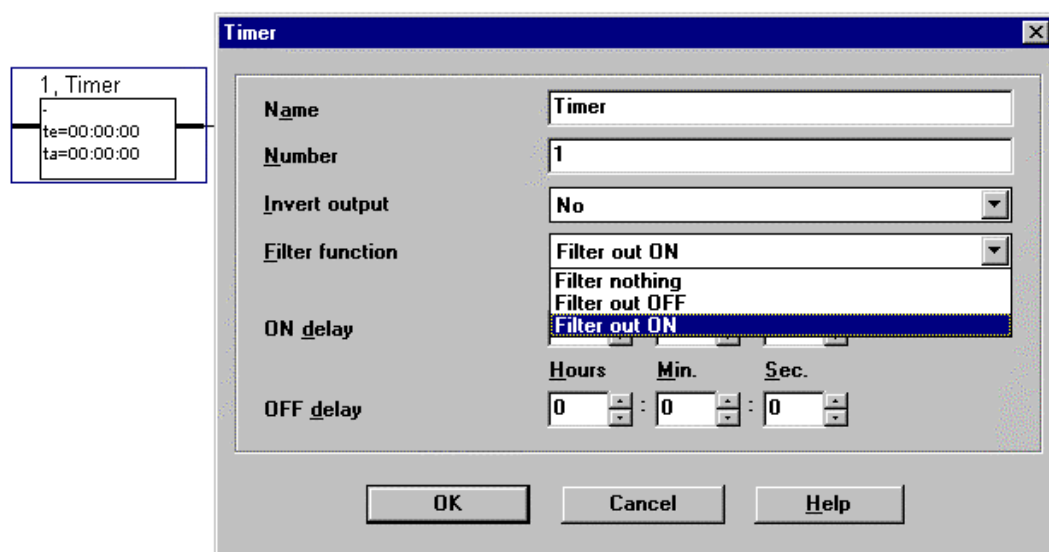
In the above example, the output only sends a telegram if the timer operation has elapsed.

The following should also be noted when using the existing timers in the AB/S 1.1 application:

If for example an ON delay is set at the timer and telegrams with the value "1" are sent to the assigned input with a shorter interval than the delay time, then the beginning of the delay is restarted with each new telegram i.e. the timer operation can never elapse.

Filter function

The "filter function" is also only possible with event-driven logic.



It can be set at the filter which telegram value is "filtered out", i.e. not passed through.

If a telegram which has been filtered out due to the settings arrives at the input of a gate or a timer and the assigned output has been set so that it sends a telegram each time a new object value is calculated, then the output does **not** send a telegram in this case.

An "effective" filter can thus also be compared with a disabled gate or a timer operation that has not elapsed.

Output of transient intermediate states (glitches)

Transient intermediate states are known to occur with hard-wired programmed controllers due to the internal operating times of the logical elements.

These so-called **glitches** do not become apparent as they only last a few microseconds and normally all memory devices and outputs have a delay of a few milliseconds.

Transient intermediate states can also occur with AB/S 1.1. This becomes noticeable for example when several telegrams with different values are sent one after the other from a stabile output state on the bus until a stabile output state is re-established.

These glitches become noticeable as usually the bus device that should react to these telegrams also reacts.

Criteria for the occurrence of glitches

All logical connections should be analysed to see if glitches could occur due to different operating times of the logical elements.

The following should be noted:

If a signal change occurs at the input of a functional sequence, the current input state is then determined for all the elements of the functional sequence and then set accordingly for the output.

This is carried out in sequential cycles.

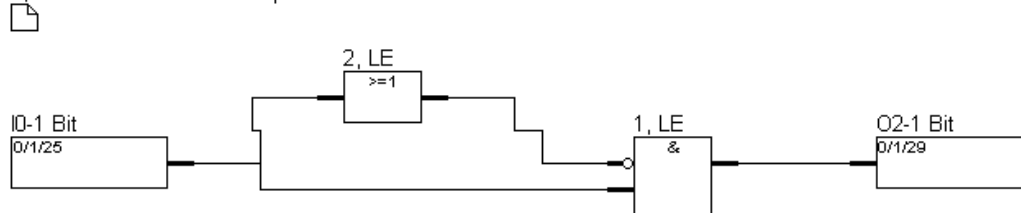
The processing of elements in a cycle is carried out in the order of their numbering. The inputs and outputs are recalculated first of all, followed by the logical elements, gates and timers.

Example of a functional sequence where a transient intermediate state arises.

As a reaction to a change at the input IO (0 →1), output O2 is set to “1” in processing cycle 2 and then set to “0” again in cycle 3.

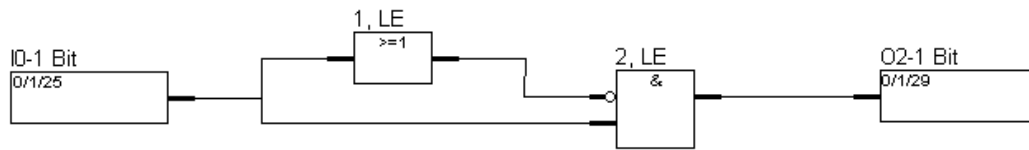
At the time of processing logical element 1, the output of logical element 2 is also “0” and the input conditions for logical element 1 are therefore fulfilled. A “1” telegram is sent. During the next cycle, the true value is determined and a “0” telegram is sent.

1, Glitches occur in this sequence



Processing cycle	Input	Element	Input conditions for logical element	Output state of logical element	Output	Glitches
1	IO=0	LE 1	not fulfilled	0	O2= 0	
		LE 2	not fulfilled	0		
2	IO=1	LE 1	fulfilled	0 →1	O2 ® 1	X
		LE 2	fulfilled	0 →1		
3	IO=1	LE 1	not fulfilled	1→0	O2= 0	
		LE 2	fulfilled	1		

1, No glitches are possible here



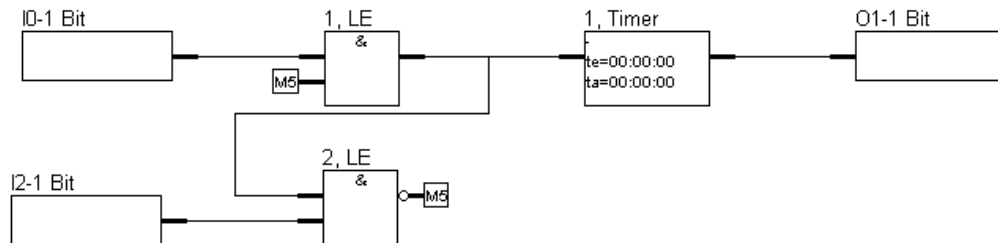
Processing cycle	Input	Element	Input condition for logical element	Output state of logical element	Output	Glitches
1	IO=0	LE 1	not fulfilled	0	O2= 0	
		LE 2	not fulfilled	0		
2	IO=1	LE 1	fulfilled	0 → 1	O2= 0	
		LE 2	not fulfilled	0		
3	IO=1	LE 1	not fulfilled	1 → 0	O2= 0	
		LE 2	fulfilled	1		

Example of a functional sequence where a transient intermediate state cannot arise. The output of logical element 2 (also “1”) is first of all determined in processing cycle 2. The true value is determined in the same cycle, output O2 remains “0”.

Note: If the parameter is set to “Output sends ... On each calculation”, there is a telegram at output 2 each time there is a telegram at input 0.

Feedback loops e.g. memory

If feedback loops e.g. for a memory device are implemented in an event-driven logic operation, it is not possible to connect a timer in series.



Due to the feedback loops in the above example, the inputs constantly receive new values and thus recalculate their status. These new calculations have the same effect on the timer as new telegrams. It can therefore happen that the timer is not switched through.

It is also not possible for a functional sequence with feedback loops to connect an output in series if the setting “Output sends On each calculation” is selected.

In this case the output would constantly send telegrams.

Reaction time

The application Logic Time 200 IO/1 of the application unit AB/S 1.1 processes the logical functions sequentially, similar to a PLC.

The state of the input and outputs is then determined in one processing cycle. Finally the elements are processed internally according to the parameters that have been assigned.

The processing of the elements in a cycle is carried out in the order of their numbering. The logical elements are calculated first of all, followed by the gates and then the timers.

Finally the newly calculated states are sent.

The timer for a processing cycle – for processing the elements in ascending order of numbers – is typically 100 ms.

Bus load

If AB/S 1.1 with the application Logic Time 200 IO/1 is used as a telegram multiplier, a high bus load may occur at times which should be considered during the configuration stage.

Behaviour on bus voltage failure

In the event of a bus voltage failure, the application unit AB/S 1.1 stores the states of the inputs and outputs for at least an hour. If the bus voltage failure lasts considerably longer than an hour, the stored states are lost.

States that are stored after a bus voltage failure can be accessed by selecting the parameter setting: "Behaviour on bus voltage recovery".

In order to avoid unwanted operational performance particularly in larger installations, the installation of an uninterruptible power supply should be provided for the bus voltage and for the interrogation voltage of the contacts.

Application tips

- ☐ Use the application sensibly and within its limits
- ☐ Define and fix the task of the controller (e.g.: functional sequence plan)
- ☐ Structure and document the control system (use worksheets)
- ☐ Use logic functions sensibly and carefully
- ☐ Consider the chronological sequence and order of the signals
- ☐ Note the working method of AB/S 1.1 according to the manual or Help function
- ☐ Allow sufficient reserve for corrections and additions (10-20%)

Technical hotline

Our ABB i-bus® EIB hotline is at your disposal for any technical queries you may have regarding the application unit. You can contact the hotline on weekdays between 9:00 and 12:00 and between 13:00 and 16:00. You can leave a message on the answerphone outside of these times.

Hotline number: +49 (0) 6221 701 434



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